



Utilizing ICT in Indian Agriculture

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Abstract

Indian agriculture has been blooming over the years because of its huge productions throughout the year however they have been constant practice of improving the production by utilising various new technology available in the market. With the introduction of chemical fertilizers to availability of artificial intelligence a lot has been improved in the Indian agriculture. The present research is an attempt to explore the utilisation of information and communication technology tools and application in Indian agriculture.

The descriptive research design with survey method was use. 100 respondents were contacted from Delhi NCR.

The result of the study indicates that the information and communication technology tools and applications can be beneficial in predicate the weather and other related information. With availability of accurate data regarding the weather it is beneficial for the farmers to plan their cultivation accordingly. The implementation of ICT initiatives in Indian agriculture can benefit the farmers as well as the consumers. The study finds that radio mobile phone big data AI are the important ICT tools that can be beneficial for Indian agriculture perspective.

Keywords: *Agriculture, Agriculture Marketing, ICT, Technology*

Introduction

India's economy is built on its agricultural sector. Agriculture employs millions of people at any given time. In addition to making more money, this is advantageous to India's enormous population. India's agriculture industry grew at a high and rapid rate of 2.6% each year after independence. More milk is produced in India than any other nation in the globe. India is the world's second-largest producer of rice, wheat, groundnuts, tobacco, and ranks third in the production of coffee (Chand, R. 2008).



India has the second-largest amount of arable land in the world, but its agricultural output is poor; just 30% of each crop is produced there on a worldwide level. India has sufficient technology, but it hasn't been fully exploited since the manufacturers are ignorant of it. Although working day and night in the fields, farmers are unable to reap good harvests. ICT solutions are increasingly essential for Indian agriculture companies to implement their marketing messaging correctly and successfully (Chadha, G.K., & Gulati, A. 2007).

This is so that farmers and agribusiness companies in the sector may more swiftly achieve the stated target by employing ICT technologies in marketing (Aleke, B., et al 2011). One of the greatest barriers to the adoption of information and communication technology-based extension services in the agriculture sector is the lack of internet literacy among farmers and middlemen. Lack of personnel training, poor infrastructure, and unstable network connection are a few more challenges to implementing ICT-based extension services in agriculture (Anwasha Banerjee (2011).

Objectives

The study aims to achieve following objectives-

- To study the role of ICT uses in the field of agriculture in India
- To determine applications and tools of ICT that affect agriculture in India

Hypothesis

The researcher formed the following hypothesis for the study

H1: There is role of ICT in the field of Indian Agriculture

H2: The applications and tools of ICT affect agriculture in India

Literature Review

According to (Reddy, T. S. 2021), government involvement in agriculture marketing has aided in its growth throughout the years. Digital apps may be utilized to create agricultural marketing from scratch in today's primarily digital economy. Small-scale farmers can find many buyers willing to pay top money for their fresh agricultural products by using ICT. Farmers who operate small farms used to only interact with a select group of direct pickup clients. There are more consumers in the modern digital farm marketing model. Via digital and internet-based applications on their Android phones, farmers may obtain market information that helps minimize imbalances, logistics and transportation inefficiencies, and product loss and damage.



According to (Deshpande, T. 2017), India has adequate technology, but it has not been properly utilized since manufacturers are unaware of it. Farmers toil in the fields day and night, expecting for bountiful harvests, but they are unsuccessful. Agriculture marketing requires careful planning and preparation. Agriculture markets in developing nations like India suffer from inadequate infrastructure, poor transportation and connection, weak rule of law, and restricted access to financing.

Due to the resultant market failure, which "regulates prices and institutions," market-oriented liberalization was made possible. As a result, marketing networks that included credit unions, farmers' cooperatives, wholesale cooperatives, public marketing boards, and manufacturers began to form. Producers have been forced to get market-competitive pricing, which can only be done if the government makes every effort to enhance market-competitive marketing channels (Deshpande, T. 2017).

Research Methodology

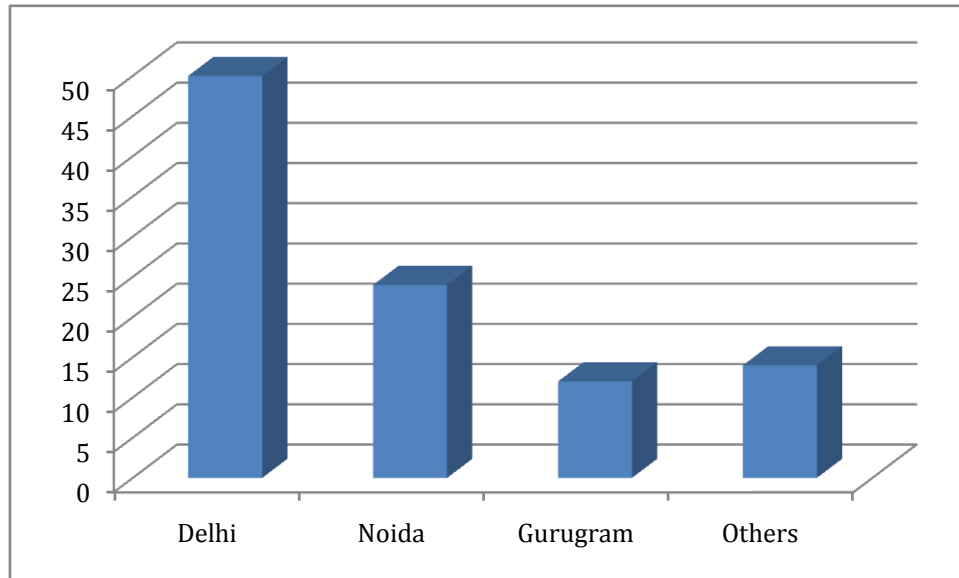
The researcher employed a descriptive research design for the given study to inquire the role of ICT uses in the field of agriculture in India.

Data collection: The researcher employed the survey approach to gather data and used the online questionnaire. Respondents were given the questionnaire via a convenient sampling procedure. Delhi-NCR was selected as the study's geographic focus, and a total of 100 respondents were approached. The goals of the study were the theme of a total of 5 questions.

Data analysis: The analysis of the data was done through MS-Excel and correlation method was used to verify the hypothesis.

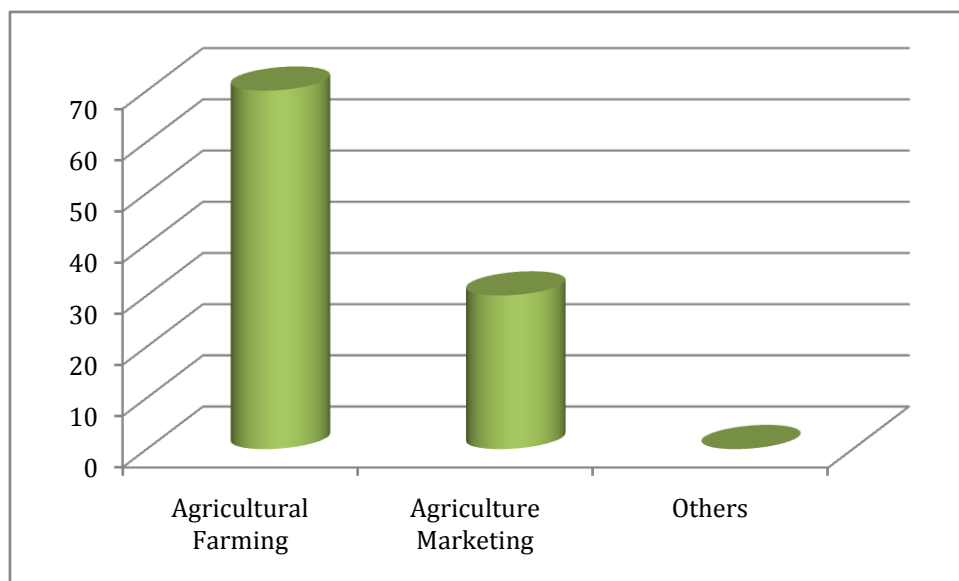
Data Analysis

1. Which region you belong to?



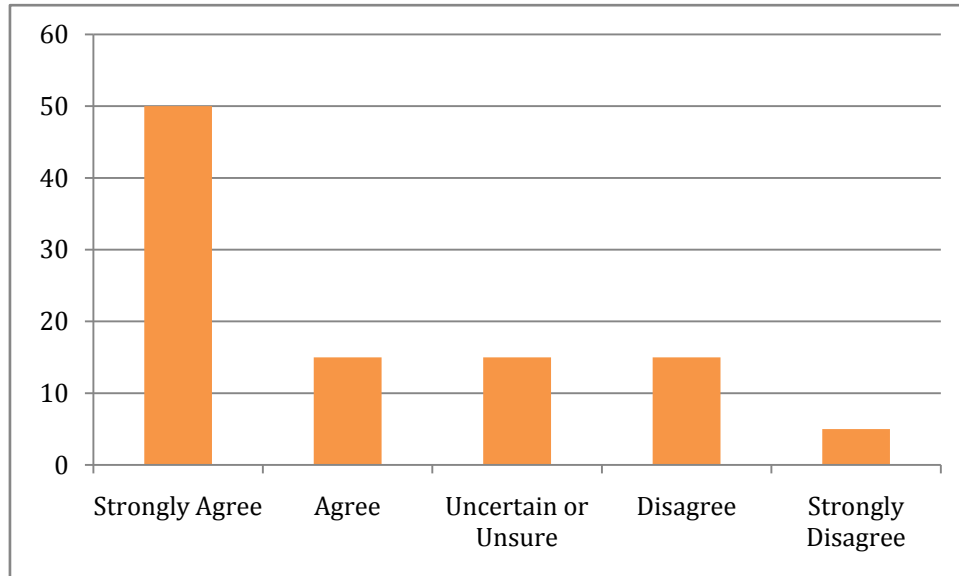
Most of the respondents participated from Delhi followed by Noida, Gurugram and others.

2. In which sector related to agriculture you are working?



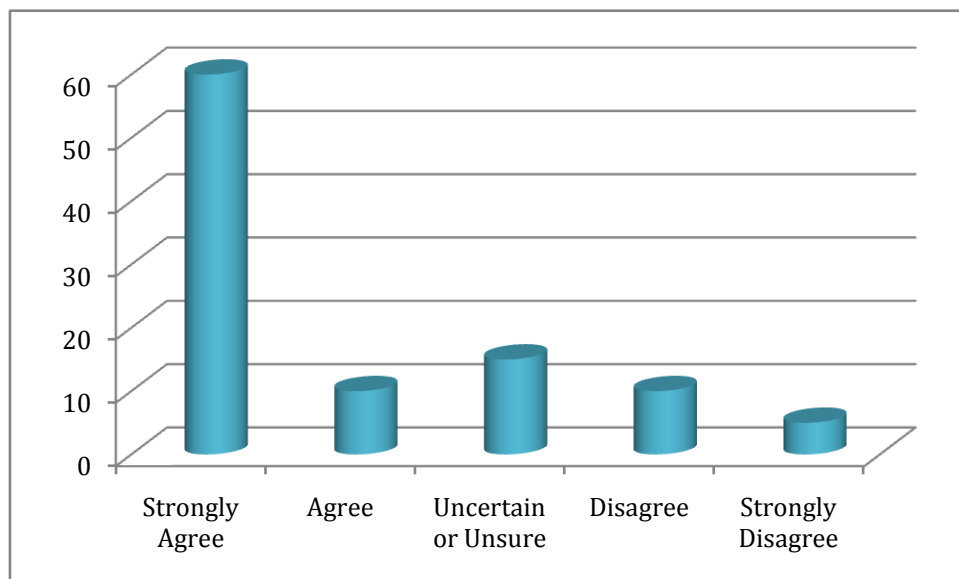
Most of the respondent participated in the survey were working in the agriculture farming.

3. The ICT tools and applications can be beneficial in predicting weather and increasing yields in the farm.



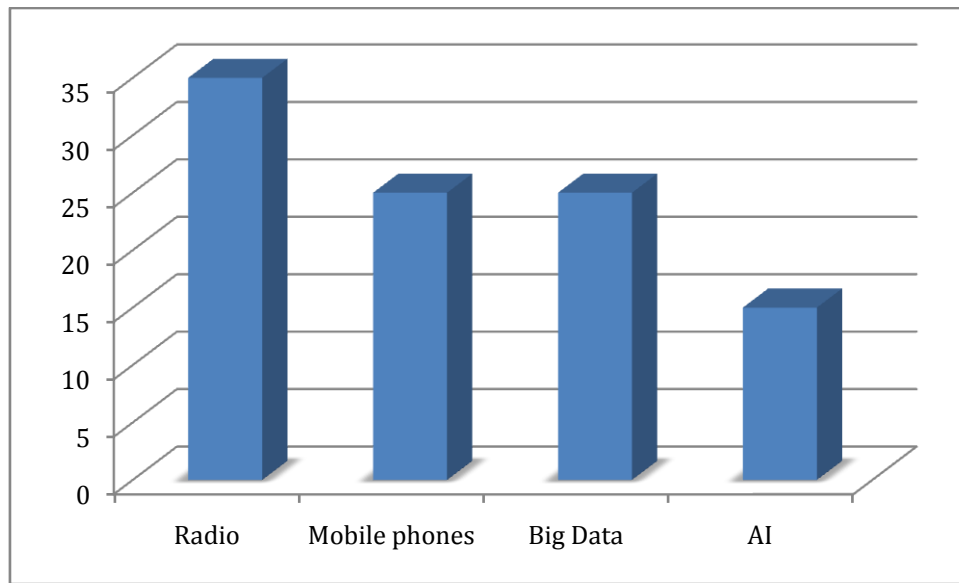
Most of the respondents comprehend to the fact that ICT tools and applications can be beneficial in predicting whether and increasing production in the farm.

4. The implementation of ICT initiatives in Indian agriculture can benefit farmers as well as consumers



Most of the respondents comprehend that implementation of ICT initiative in Indian agriculture will benefit farmers and consumers.

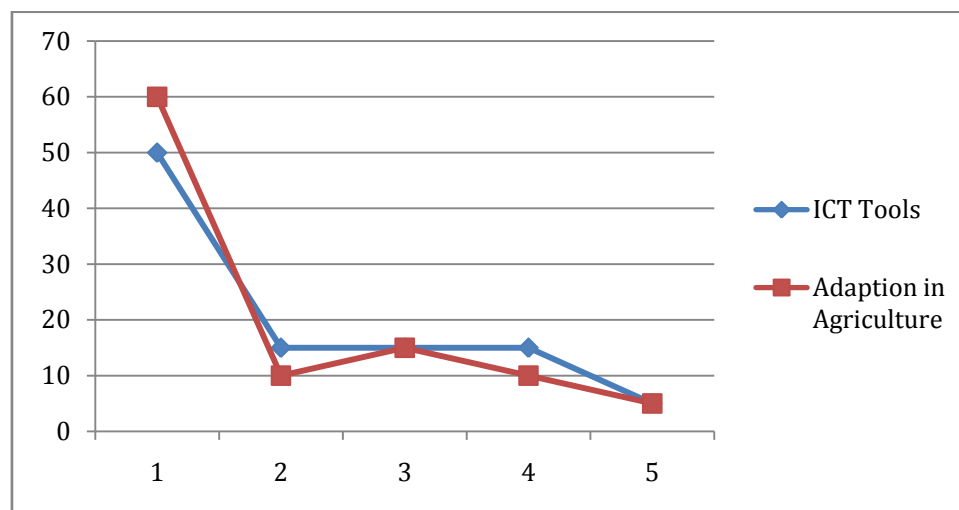
5. Which ICT tools are beneficial for Indian agriculture perspective?



As per the respondents the most popular ICT tools for farmers is radio followed by mobile phones.

Hypothesis Testing

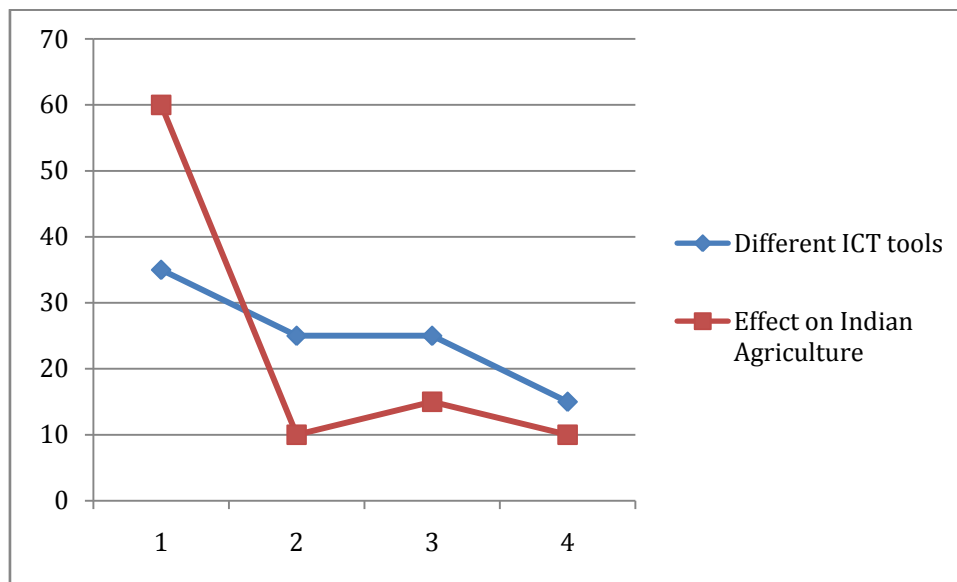
H1: There is role of ICT in the field of Indian Agriculture



	ICT Tools	Adaption in Agriculture
ICT Tools	1	
Adaption in Agriculture	0.988244	1

As per the response of the question no. 3 and 4 of the survey there is correlation($r=0.98$) between ICT Tools and Adaption in Agriculture. Hence it's proved that there is a significant impact of ICT Tools and Adaption in Agriculture. In this way the first hypothesis is proved.

H2: The applications and tools of ICT affect agriculture in India



	Different ICT tools	Effect on Indian Agriculture
Different ICT tools	1	
Effect on Indian Agriculture	0.840663	1

As per the response of the question no. 4 and 5 of the survey there is correlation($r=0.84$) between different ICT tools and effect on Indian Agriculture. Hence it's proved that there is a significant different ICT tools and effect on Indian Agriculture. In this way the second hypothesis is proved.

Result and Discussion

The study's findings suggest that the tools and applications of information and communication technology can be useful in forecasting the weather and other relevant information. It is advantageous for farmers to plan their cultivation in accordance with the availability of precise



meteorological data. ICT activities in Indian agriculture may be advantageous to both farmers and consumers. The study discovers that radio, mobile phones, big data, and AI are significant ICT instruments that might be advantageous from the standpoint of Indian agriculture.

Conclusion

Technology in agriculture promotes farmer engagement, knowledge retention, and sharing while also assisting in the distribution of information. The findings of the poll demonstrate that ICT can assist farmers in meeting their demands by giving them quick access to accurate meteorological information. The results of the poll suggest that giving farmers information on markets, pricing, and research and development initiatives can also assist to meet their needs. It is also feasible to meet the demands of the farmers by utilizing ICT-based solutions to educate them, connect producers and consumers, and use a number of other channels.

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